

**UNITED STATES DISTRICT COURT  
EASTERN DISTRICT OF MISSOURI  
EASTERN DIVISION**

UNITED STATES OF AMERICA,

Plaintiff,

SIERRA CLUB,

Plaintiff-Intervenor,

v.

AMEREN MISSOURI,

Defendant.

Civil Action No. 4:11-cv-00077-RWS

**PLAINTIFFS' REMEDY TRIAL BRIEF**

## Introduction

In 2007 and 2010, Ameren performed the largest boiler upgrades in the history of its Rush Island power plant. But Ameren failed to obtain the requisite PSD permits for those modifications, and it failed to implement state-of-the-art pollution controls. Had Ameren complied with the law, Rush Island would have emitted tens of thousands of tons less sulfur dioxide in following years.

Sulfur dioxide has been regulated under the Clean Air Act for 50 years—and for good reason. Once emitted, most SO<sub>2</sub> is transformed into fine particulate matter (PM<sub>2.5</sub>), a potent air pollutant known to cause increased risks of premature deaths, heart and lung disease, and other adverse health effects. Modern pollution controls can dramatically reduce SO<sub>2</sub> emissions, saving lives in the process. While the rest of the electric industry made great strides in reducing SO<sub>2</sub> pollution, Rush Island took only baby steps, rising steadily in the ranks to become one of the country's biggest SO<sub>2</sub> sources. That pollution contributed to PM<sub>2.5</sub> levels across much of the eastern U.S., a range extending from New England to New Orleans, from Minneapolis to Miami.

Plaintiffs seek to remedy these violations by bringing Rush Island into compliance with the law—which will reduce SO<sub>2</sub> emissions during operations going forward—and by remediating the harm for its 160,000 (and counting) excess tons of illegal pollution. To comply, Ameren must do what the statute requires: obtain a PSD permit and implement state-of-the-art pollution controls measures. Here, Ameren has already evaluated SO<sub>2</sub> control technologies for the Rush Island plant, and the Company confirmed that it can implement the industry benchmark control for SO<sub>2</sub> pollution: flue gas desulfurization (FGD or “scrubber”) technology.

Once brought into compliance, there will be relatively little subsequent SO<sub>2</sub> pollution from the Rush Island plant. But Ameren must still address the decade of harm from its violations

and take steps to reduce pollution from the same areas into which it was emitting. To that end, Plaintiffs have identified a range of pollution control measures that could be employed at Ameren's nearby Labadie Energy Center. The pollution from that facility affects the same communities as that from Rush Island, and to the same degree. As such, efforts to reduce its pollution would—ton-by-ton and over the coming years—pay back the pollution debt Ameren incurred against the public's health and welfare. Ameren, for its part, has offered no remediation plan at all.

### **Statement Of The Issues Before The Court**

Ameren violated the law when it modified Rush Island Units 1 and 2 “without obtaining the required permits [and] installing best-available pollution control technology.” *United States v. Ameren Missouri*, 229 F. Supp. 3d 906, 914 (E.D. Mo. 2017). The question presented in this remedy trial is what to do about those violations. In broad terms, Plaintiffs seek a two-part remedy. First, Ameren must come into compliance with the Clean Air Act. Second, Ameren must redress the harm caused by the excess pollution emitted during the decade since it modified Rush Island.

### ***Compliance***

This is not an ordinary injunctive relief case. Rather, this case involves a sovereign acting in the public interest to remedy an established violation of a public health law. As such, though the Court enjoys some discretion in directing *how* or *how quickly* Ameren must come into compliance at the Rush Island plant, the question *whether* compliance is required was answered by Congress. *Weinberger v. Romero-Barcelo*, 456 U.S. 305, 315 (1982) (approving of an order to require the Navy to obtain a permit, on grounds it “temporarily, not permanently, allowed the Navy to continue its activities without a permit”); *United States v. City of Painesville*, 644 F.2d

1186, 1194 (6th Cir. 1981) (“Congress did not contemplate that its decision would be thwarted by judicial reluctance to require compliance when enforcement proceedings are brought and liability is proven.”). Though courts need not mechanistically issue an injunction in all cases, neither can they “override Congress’ policy choice, articulated in a statute, as to what behavior should be prohibited.” *United States v. Oakland Cannabis Buyers’ Coop.*, 532 U.S. 483, 497 (2001). Indeed, where a violation has been established, the law must be enforced:

Once Congress, exercising its delegated powers, has decided the order of priorities in a given area, it is ... for the courts to enforce them when enforcement is sought. Courts of equity cannot, in their discretion, reject the balance that Congress has struck in a statute. *Their choice (unless there is statutory language to the contrary) is simply whether a particular means of enforcing the statute should be chosen over another permissible means; their choice is not whether enforcement is preferable to no enforcement at all.* ... To the extent the district court considers the public interest and the conveniences of the parties, the court is limited to evaluating how such interest and conveniences are affected by the selection of an injunction over other enforcement mechanisms.

*Id.* at 497-98 (emphasis added; citations and quotations omitted); *see also Romero*, 456 U.S. at 320 (Court must order “relief it considers necessary to secure prompt compliance with the Act.”).

The statute’s Best Available Control Technology requirement is central to compliance with PSD. Under the Clean Air Act’s PSD program, “[i]t is unlawful to construct or modify a ‘major emitting facility’ . . . without first obtaining a permit. To qualify for a permit, the facility . . . must comply with emissions limitations that reflect the ‘best available control technology’ (or BACT)” for each pollutant subject to regulation. *Utility Air Regulatory Group v. EPA*, 134 S. Ct. 2427, 2435 (2014) (citing 42 U.S.C. §§ 7475(a), 7479(2)(C)). BACT, in turn, is an “emissions limitation based on the maximum degree of reduction of each pollutant subject to regulation.” 42 U.S.C. § 7479(3). Setting BACT emissions limitations for a pollutant from a specific facility is a case-by-case endeavor that weighs a number of factors, including, “energy, environmental, and economic and other costs.” *Id.*; 40 C.F.R. § 52.21(b)(12) (defining BACT).

In practice, the BACT analysis is guided by the “top-down” methodology, an approach long used by both EPA and by Missouri in the State’s permitting practices to ensure a thorough review of the statutory factors. As the Supreme Court explained:

In brief, the top-down process provides that all available control technologies be ranked in descending order of control effectiveness. The PSD applicant first examines the most stringent—or “top”—alternative. That alternative is established as BACT unless the applicant demonstrates, and the permitting authority in its informed judgement agrees, that technical considerations, or energy, environmental, or economic impacts justify a conclusion that the most stringent technology is not “achievable” in that case.

*ADEC v. EPA*, 540 U.S. 461, 475–76 (2004) (*quoting* EPA’s Draft New Source Review Workshop Manual, Oct. 1990 [PLX 1190] (“NSR Manual”) at B2).

For large, coal-fired electric generating units, BACT for SO<sub>2</sub> pollution has long meant one thing: an emission rate based on the use of flue gas desulfurization (FGD) equipment or “scrubbers.” Modern scrubbers can reduce SO<sub>2</sub> pollution by more than 95% and have been installed on tens-of-thousands of megawatts of generating capacity over the last 20 years. As it turns out, around the same time Ameren was implementing its Rush Island modifications, Ameren spent millions of dollars and several years identifying—and even designing—an FGD system for the facility. In this case, determining BACT-level limitations for Rush Island is straight-forward: widespread implementation of scrubbers in the coal-fired power plant industry prove the technology is “achievable,” *ADEC*, 540 U.S. at 475-76, and the technical and economic conclusions presented by Ameren’s own scrubber study highlight that fact. Here, BACT requires emissions limits based on the application of FGD technology, and Rush Island should be subject to limitations at least as stringent as those Ameren concluded were achievable around the time of the violations at issue here.

### ***Remediation***

The evidence will show what BACT would have been had Ameren followed the law at the time of the upgrades. This “historic BACT” estimate will serve as the starting point for measuring the volume of excess pollution that has been emitted by the Rush Island facility since the time of the major modifications. By comparing what the Rush Island units should have been emitting for the last decade to their actual emissions, the court can resolve the size of Ameren’s pollution debt to the public. The question then will be how best Ameren can pay it back.

Ameren’s Labadie Energy Center, located only 40 miles from Rush Island, operates four units that are essentially identical to the Rush Island units. The SO<sub>2</sub> pollution from Labadie affects the same populations—and to the same degree—as the SO<sub>2</sub> pollution from Rush. As such, reducing SO<sub>2</sub> pollution at Labadie benefits the same populations harmed by Rush Island’s excesses. Plaintiffs have identified several feasible control options for Labadie. Some involve larger capital investments but lower operating expenses, while others require relatively minor capital investments but higher operating expenses. The options also range in their control efficiency, which dictates how quickly the excess emissions can be offset.

Whether Ameren should take steps to remediate the harm from its violations is committed to the Court’s equitable discretion. That discretion is guided by factors set forth in

*eBay Inc. v. MercExchange, L.L.C.*:

(1) that [plaintiff] has suffered irreparable injury; (2) that remedies available at law, such as monetary damages, are inadequate to compensate for the injury; (3) that, considering the balance of hardships between the plaintiff and defendant, a remedy in equity is warranted; and (4) that the public interest would not be disserved by a permanent injunction.

547 U.S. 388, 391 (2006). Of course, environmental harm, “by its nature, can seldom be adequately remedied by money damages and is often permanent or at least of long duration, *i.e.*,

irreparable.” *Amoco Prod. Co. v. Gambell*, 480 U.S. 531, 545 (1987); *see also Mitchell v. Robert Demario Jewelry*, 361 U.S. 288, 296 (1960) (noting in an FLSA case there was “little room for the exercise of discretion not to order” equitable relief in light of the statute’s purpose).

The Court’s consideration of available options for remediating the harm from Rush Island’s pollution will be further informed by “(1) whether the proposal ‘would confer maximum environmental benefit,’ (2) whether it is ‘achievable as a practical matter,’ and (3) whether it bears ‘an equitable relationship to the degree and kind of wrong it is intended to remedy.’” *United States v. Deaton*, 332 F.3d 698, 714 (4th Cir. 2003) (quoting cases).

### **Overview Of The Plaintiffs’ Case**

Many of the fundamental issues presented in this case will be answered in Ameren’s own words. Ameren’s documents will show that the top scrubber technology is technically and economically feasible at Rush Island, and the plant can achieve emissions reductions similar to other scrubbed plants burning the same type of coal.

After testimony from EPA engineer Jon Knodel, Plaintiffs’ presentation of evidence will principally involve expert testimony. Mr. Knodel will set the stage by describing how Rush Island’s emissions compare to other sources in the region and will give some background on the PSD permit process that Ameren failed to undergo. From there, Plaintiffs plan to call the following expert witnesses.<sup>1</sup>

***Pollution Control Expert Dr. James Staudt.*** Dr. Staudt has been designing and assessing air pollution control systems for nearly 30 years. Relying on Ameren’s own pollution

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<sup>1</sup> In addition, Plaintiffs have preserved the option to call a handful of may-call witnesses, as indicated on our witness list. Sierra Club notes separately that, in light of the Court’s ruling on its standing (ECF 1055), it may call up to four Sierra Club members to demonstrate that its members have standing to seek injunctive relief at Labadie.

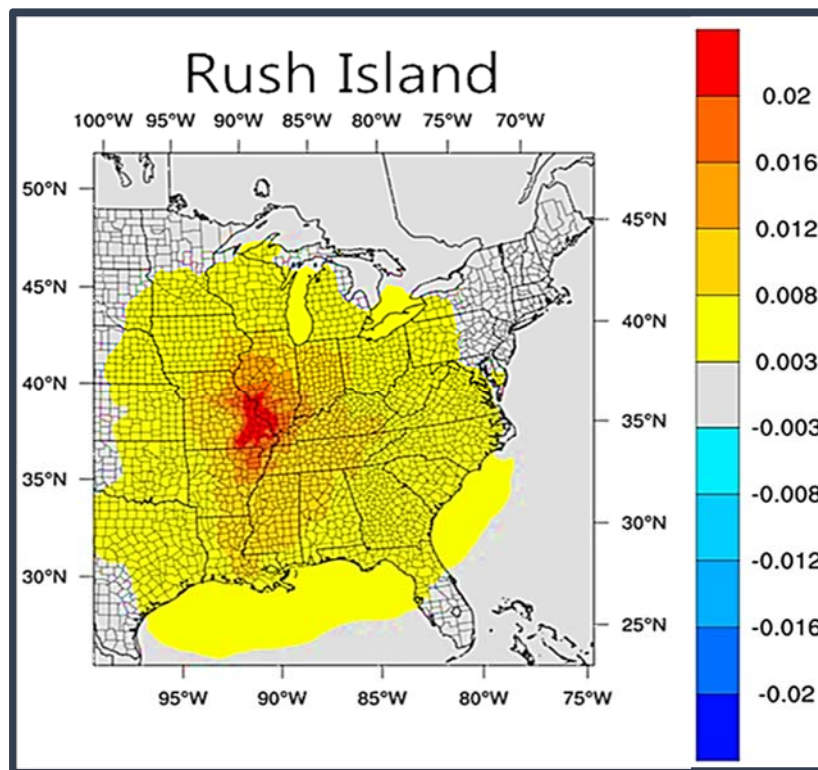
control studies and numerous contemporaneous permit actions, Dr. Staudt will testify that, in 2007 and 2010, BACT would have required the installation of scrubbers at Rush Island. He will also testify that the same scrubber technology—now capable of achieving a slightly better emissions rate—would constitute BACT for those units today. Using his “historic BACT” conclusions as a benchmark, Dr. Staudt will present how much excess SO<sub>2</sub> Rush Island has emitted over the past ten-plus years as a result of Ameren’s failure to install BACT controls when it overhauled the Rush Island units. By calculating the difference between emissions rates that would have been accomplished using the requisite technology and Rush Island’s actual pollution levels in those intervening years, Dr. Staudt’s assessment gives Ameren credit for the half-measure emissions reduction efforts it has undertaken during the pendency of this litigation, while still quantifying the pollution that the facility would not have emitted had Ameren complied with PSD’s requirements. On Dr. Staudt’s accounting, Rush Island had emitted more than 160,000 tons of excess SO<sub>2</sub> pollution through the end of 2016, an amount that continues to grow by thousands of tons each year. Finally, Dr. Staudt will describe different options for removing an equivalent amount of SO<sub>2</sub> from Labadie’s emissions in future years.

***Economist Matthew Kahal.*** An economist with four decades of experience, Mr. Kahal specializes in energy economics, public utility regulation, and financial analysis. Mr. Kahal will describe Ameren Missouri’s financial health and the company’s ability to pay for various pollution control measures at its plants. As Mr. Kahal will show, Ameren is generating about \$1 billion in cash flow per year from operations and paying out nearly \$400 million in dividends per year to its parent corporation. Though pollution controls can be a costly investment, it is a cost much of the rest of the industry has borne for years; Ameren’s financials show it will have no



trouble affording the controls required for compliance at Rush Island as well as the measures at Labadie necessary to remediate the harm from Ameren's violations.

***Air quality modeling expert Lyle Chinkin.*** A nationally-recognized expert in air quality modeling, Lyle Chinkin will describe what happened to Rush Island's excess SO<sub>2</sub> pollution after it was emitted. As he will explain, SO<sub>2</sub> pollution largely transforms into fine particulate matter in the atmosphere and can be blown hundreds or even thousands of miles from an emitting facility. Mr. Chinkin will present the results of his modeling analysis to describe the fate and transport of Rush Island's SO<sub>2</sub> and its downwind impacts, which extend out from the plant in every direction of the compass and run from Kansas to the Atlantic coast.



Pl. Ex. 1364 (mapping the average annual PM<sub>2.5</sub> impact in µg/m<sup>3</sup> from excess pollution at Rush Island in 2011). Mr. Chinkin will also describe the benefits associated with controlling SO<sub>2</sub> emissions from the Labadie plant. Mr. Chinkin's modeling will show that the pollution from the Labadie plant travels to the same areas as that from Rush Island. As such, any emissions

reductions implemented at Labadie would benefit the same areas and populations that the excess emissions from Rush Island harmed, making the Labadie plant well-suited for projects that aim to offset some of the harm caused by Ameren's PSD violations.

***Pollution health-effects expert Dr. Joel Schwartz.*** Dr. Schwartz, a Professor at the Harvard School of Public Health and Harvard Medical School, and one of the world's preeminent authorities on the health effects of air pollution, will testify about the public health effects of PM<sub>2.5</sub>. Dr. Schwartz will describe the broad scientific consensus that PM<sub>2.5</sub> air pollution increases risk of premature death, heart and lung disease, and other adverse health effects—and that when it comes to the air breathed by communities affected by Rush Island's illegal pollution, there is no “lower limit” below which PM<sub>2.5</sub> pollution is “risk free.” Using the air quality modeling results from Mr. Chinkin as well as his own analyses published in scientific journals, he will show that Rush Island's excess SO<sub>2</sub> pollution has caused significant harm to the health and welfare of downwind communities, and has been responsible for hundreds of premature deaths in the decade since the facility was modified. He will also explain how reducing future emissions from the Labadie plant will produce health benefits in those same communities, thus offsetting the harm to public health caused by Ameren's illegal emissions.

### **Relief Requested**

Given the weight of this evidence, at the close of the trial, the Court should:

1. order Ameren to promptly submit an application for a PSD permit proposing BACT limitations at Rush Island at least as stringent as those Ameren already identified (e.g., in Pl. Exs. 1102 and 1144),
2. require Ameren obtain such a PSD permit and meet such limits to come into compliance with the law, and
3. set a schedule for Ameren to do so.

Additionally, upon weighing all pertinent factors, this Court should require Ameren, by a date certain, to remediate the harm to the public from Rush Island's excess emission by reducing an equivalent amount of SO<sub>2</sub> pollution from the Labadie plant in the years to come.

### **Overview Of Ameren's Case**

While Plaintiffs cannot predict all of the arguments that Ameren may present at trial, we expect the Company to rely on three principal defense theories.

**First**, Ameren likely will argue that it does not need to come into compliance with PSD's BACT requirements as a part of remedying its PSD violations. It does. Congress' prohibition of unpermitted modifications is unequivocal, the harm of illegal pollution to the public health and welfare is well-understood. The Company suggests that, had it known better, it might have pursued other, less expensive compliance options. But Ameren "must suffer the consequences of the action it chose to take—even if these, or some of these, might have been avoided had it taken a different course of action." *United States v. Westvaco Corp.*, 2015 WL 10323214, at \*8 (Md. Feb. 26, 2015). Indeed, any other result would turn the pertinent remedy inquiry on its head. *See, e.g., New York v. Niagara Mohawk Power Corp.*, 263 F. Supp. 2d 650, 663 (W.D.N.Y.) ("[Defendant's] initial failure to comply with the requirements of the Clean Air Act cannot now inure to its benefit.").

**Second**, Ameren will argue that, even if BACT is required, a discount control technology called "dry sorbent injection" or DSI is the best available technology for Rush Island. It isn't. About half as effective as scrubber technology, DSI has *never* been accepted as BACT for coal-fired electric generating units. Ameren would like the BACT analysis to settle on the "least expensive option" for emissions reductions—but the Clean Air Act requires emissions limits "based on the maximum degree of reduction" available. 42 U.S.C. § 7479(3).

*Finally*, Ameren will argue that Rush Island's decade of excess SO<sub>2</sub> pollution was harmless. It wasn't. On the law, Ameren will suggest that the National Ambient Air Quality Standards ("NAAQS") are an appropriate measure against which to assess Rush Island's excess emissions. They aren't. As explained further in Plaintiffs' concurrently-filed motion *in limine*, Ameren's theory is contravened by the statute's explicit language: the PSD program imposes its permitting and pollution-control obligations "*notwithstanding* attainment and maintenance of all [NAAQS]." 42 U.S.C. § 7470 (emphasis added).

On the science, Ameren will argue that the amount of PM<sub>2.5</sub> pollution emitted from Rush Island does not have any negative impact on the health of those living downwind. It does. Pollution from Rush Island is regulated for a reason, and Rush Island remains one of the largest sources of sulfur dioxide in the country. The broad scientific consensus holds that the PM<sub>2.5</sub> that resulted from Rush Island's illegal SO<sub>2</sub> pollution has harmed and continues to inflict harm to the public in the form of premature deaths and myriad sorts of heart and lung disease. Such harm is more than sufficient to justify the compliance and remedial relief sought by Plaintiffs here.

### **Conclusion**

Had Ameren complied with PSD, its Rush Island plant would be emitting drastically less SO<sub>2</sub> pollution today, and the public would have been saved from the deleterious—and sometimes lethal—effects of more than 160,000 tons of SO<sub>2</sub> pollution. To remedy its violations, Ameren should obtain the necessary PSD permit for the facility, implement the decade-late best available control technology, and undertake emissions reductions at its Labadie plant commensurate with the volume of Rush Island's (still growing) volume of illegal pollution.

Dated: March 27, 2018

Respectfully Submitted,

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**CERTIFICATE OF SERVICE**

I hereby certify that on March 27, 2019 I served the foregoing with the Clerk of Court using the CM/ECF system. In addition, I will serve this this memorandum and any associated exhibits via email on counsel of record.

/s/ *Elias L. Quinn*

ELIAS L. QUINN